

## IN THE CLAIMS

Please add new claims 21-31:

21. (New) The method of claim 1, wherein said desired distance comprises a uniform distance between said x-ray source and receptor.

22. (New) The method of claim 1, wherein said desired distance maintains a region of interest of said patient at said central axis.

23. (New) The method of claim 1, wherein said desired distance maintains a region of interest of said patient at an isocenter of said imaging system.

24. (New) The method of claim 1, wherein a region of interest of said patient is maintained at said central axis for said series of image exposures.

25. (New) A medical diagnostic imaging system, comprising:

a C-arm unit having an x-ray source for generating x-rays and a receptor for obtaining image exposures from received x-rays, said C-arm unit moving said x-ray source and receptor along an image acquisition path between at least first and second exposure positions, said C-arm unit rotating about a central axis corresponding to a region of interest in a patient;

x-ray source and receptor brackets mounting said x-ray source and receptor, respectively, to said C-arm unit, said x-ray source and receptor brackets moving said x-ray source and receptor to maintain said central axis for a series of image exposures;

an image processor collecting a series of image exposures from said receptor including at least first and second image exposures obtained while said x-ray source and receptor are located at said at least first and second exposure positions, respectively, said image processor collecting position data for multiple exposure positions corresponding to said series of image exposures, said image processor constructing a three dimensional (3D) volumetric data set based on said series of image exposures and said position data for said multiple exposure positions; and

a display displaying images based on said 3D volumetric data set.

26. (New) The medical diagnostic imaging system of claim 25, further comprising a tracking subsystem receiving coordinate data comprising at least one of patient, receptor, and instrument coordinate information based on a distance between said central axis and one of a patient, said receptor, and an instrument, respectively, said x-ray source and receptor moving relative to said central axis based on said coordinate data while said x-ray source and receptor are located at said at least first and second exposure positions.

27. (New) The medical diagnostic imaging system of claim 25, said receptor further comprising at least one sensor detecting a position of said receptor relative to a patient surface.

28. (New) The medical diagnostic imaging system of claim 25, further comprising a tracking subsystem receiving coordinate data representative of a patient surface from at least one sensor mounted on said receptor, said tracking subsystem setting a receptor distance relative to said central axis based on said coordinate data.

29. (New) A method for acquiring multiple x-ray images utilized to reconstruct a three dimensional (3D) volume of patient information, the method comprising:

rotating an x-ray source and receptor about a central axis between at least first and second scan angles, said central axis corresponding to a region of interest in a patient;

moving the x-ray source and receptor to first distances to maintain said central axis when at said first scan angle and moving the x-ray source and receptor to second distances to maintain said central axis when at said second scan angle;

acquiring at least first and second images at said at least first and second scan angles; and

constructing a three dimensional (3D) volumetric data set based on said at least first and second images.

30. (New) The method of claim 29, the moving step further comprising detecting coordinate data comprising at least one of patient, receptor, and instrument coordinate information based on a distance between said central axis and one of a patient, said receptor, and an instrument, respectively, to define said first and second distances.

31. (New) The method of claim 29, the moving step further comprising:

determining said first distance for the receptor relative to said central axis by moving the receptor towards a patient surface until receiving a sensor signal indicating a predefined distance between the receptor and the patient surface; and

calculating said second distance for the x-ray source relative to said central axis based on said first distance for the receptor.